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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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BRUCE H. TROXELL
SUITE 1404
5205 LEESBURG PIKE
FALLS CHURCH, VA 22041

EXAMINER
WILKINS III, HARRY D

ART UNIT	PAPER NUMBER
1742	3

DATE MAILED: 10/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/085,074	LIN ET AL.	
	Examin r	Art Unit	
	Harry D Wilkins, III	1742	

-- Th MAILING DATE of this communication appears on th cover sheet with th correspond nc address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☒ Claim(s) *1,6 and 10* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 March 2002* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Drawings

1. The drawings are objected to because in Figure 1, part "29" has been mislabeled as part "22" (see Fig. 2 for correct labeling) and part "27" is not labeled (see Fig. 2 for correct labeling). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

2. A substitute specification in proper idiomatic English and in compliance with 37 CFR 1.52(a) and (b) is required. The substitute specification filed must be accompanied by a statement that it contains no new matter.

It appears that the application and claims were translated from Chinese and does not contain proper English and the specification and claims contain numerous grammatical errors. For example, claim 1, lines 1-2 reads "... which applied to polish the inner surface of the long tube full of electrolyte..", but it should read "... which is applied to polish the inner surface of the long tube which is full of electrolyte.." (with additions underlined).

Also, Applicant should amend the specification to change each instance of "Wolfram" to "Tungsten" as this is the generally accepted and better known term . Also, it appears that the words "bubbles" was mistranslated as "bulbs". Appropriate correction is required.

Claim Objections

3. Claims 1, 6 and 10 are objected to because of the following informalities: claims 1 and 10 recite in the third clause "fixed magnet mechanism being radially and averagely distributed on the two partitions" which is unclear, and claim 6 recites "bulbs", which as mentioned above, should be "bubbles". It will be assumed that the clause in claims 1 and 10 mean that the fixed magnet mechanism is placed in the center of the area between the two partitions. Appropriate correction is required.

Double Patenting

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 1-9 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-20 of copending Application No. 10/076,289 (as seen in US 2003/0098245 A1) in view of Perline (US 5,099,216). Claim 1 of 10/076,289 disclose an electroplating means including at least one electrode having a cable bounded to the electrode and an axial drive mechanism and (per claim 10) a plurality of partitions as needed. Though the

claim does not recite that the cable is hooked up to a power source, it would have been obvious to one of ordinary skill in the art to have supplied the necessary electricity at the electrode through the cable (see e.g.-means disclosed by Lorincz et al in Fig. 1). Claim 1 does not disclose the fixed magnet mechanism, the driving apparatus with electromagnets and the axial drive mechanism moving the driving apparatus.

Perline teaches (see abstract and col. 2, line 52-col. 4, 9) means for controlling the positioning/motion of an object through use of magnetic levitation. The means include a fixed magnet set and a set of adjustable electromagnets. These means allow for reduction of friction and wear and also permit precise control of the positioning of tools. The means provide for motion in any direction and rotation about any axis.

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the magnetic levitation means of Perline into the apparatus of 10/076,289 because the magnetic levitation means reduce friction and wear and allow for precise control of tool positioning, thus providing a more accurate electropolishing method.

It would have been within the expected skill of a routineer in the art to set-up the magnetic levitation means of Perline for the task of moving the electrode of 10/076,289 by including a set of fixed magnets on the electrode and providing a set of electromagnets outside the tube for the purpose of moving the electrode by means of a driving mechanism. There would be an axial driven mechanism for moving the electromagnets up and down the tube. The electromagnets require a power source of their own, thus necessitating a second power source.

Regarding claim 2, claim 5 of 10/076,289 teaches using an insulating material for the partition.

Regarding claim 3, claim 7 of 10/076,289 teaches using a plurality of slots at the edges of the partitions for more fluent introduction of the electrolyte.

Regarding claim 4, claim 8 of 10/076,289 teaches using a plurality of mesh holes in the partitions for more fluent introduction of the electrolyte.

Regarding claim 5, the claims of 10/076,289 do not teach that the dimensions of the partitions can be enlarged. Perline teaches (see col. 2, line 52- col. 4, line 9) that the driving apparatus and the fixed magnet mechanism are used to create magnetic levitation for precise control of the positioning of the electrode.

Regarding claims 6 and 7, claims 13 and 14 of 10/076,289 teach the screw mechanism (propeller) for fast removal of air bubbles.

Regarding claim 8, Perline teaches (see col. 2, line 52-col. 4, line 9) that the driving apparatus (the electromagnets) is powered by a power device and that the electromagnets are "driven" (i.e.-magnetized). Though the claims of 10/076,289 are silent about the rotation of electrode, Perline teaches that the means provide six degrees of freedom (x-y-z Cartesian coordinates and rotation about each of these axes) and it would have been obvious to cause the electrode (with the fixed magnet mechanism) to rotate in order to ensure a more uniform electropolishing (by ensuring that any defects of the electrode are not concentrated in one spot thus forming a groove in the tube surface).

Regarding claim 9, Perline teaches (see col. 2, line 52-col. 4, line 9) that the magnetic levitation means provide six degrees of freedom (x-y-z Cartesian coordinates and rotation about each of these axes) and it would have been obvious to rotate the driving apparatus "by direct mechanical transmission" to cause the electrode (with the fixed magnet mechanism) to rotate in order to ensure a more uniform electropolishing (by ensuring that any defects of the electrode are not concentrated in one spot thus forming a groove in the tube surface).

This is a provisional obviousness-type double patenting rejection.

6. Claims 10-18 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-20 of copending Application No. 10/076,289 in view of Perline (US 5,099,216), Aiura et al (EP 951960) and Sakata et al (US 4,561,185).

The teachings of 10/076,289 and Perline are discussed above in paragraph no. 5. However, 10/076,289 and Perline do not teach plural closed fillisters being placed on the second partition, wherein the fillister includes a flexible element and a protruding object supporting an abrasive for grinding the inner surface.

Aiura et al teach (see Fig. 3 and paragraph 37) the grinding of the inner surface of a tube by means of abrasives that are pushed against the inner surface.

Sakata et al teach (see col. 6, lines 34-59) using a thimble and spring set-up to apply a constant pressure.

Therefore, it would have been obvious to one of ordinary skill in the art to have added a grinding apparatus, such as that disclosed by Aiura et al to the apparatus of

10/076,289 and Perline because the apparatus of Aiura et al provides for (see abstract) high precision polishing, and it would have been obvious to one of ordinary skill in the art to have used the thimble and spring set-up (fillister) of Sakata et al to apply pressure behind the abrasive elements because the thimble-spring provides a constant pressure thus making the grinding more uniform.

Regarding claim 11, claim 7 of 10/076,289 teaches using a plurality of slots at the edges of the partitions for more fluent introduction of the electrolyte.

Regarding claim 12, claim 8 of 10/076,289 teaches using a plurality of mesh holes in the partitions for more fluent introduction of the electrolyte.

Regarding claim 13, 10/076,289 do not teach that the dimensions of the partitions can be enlarged. Perline teaches (see col. 2, line 52- col. 4, line 9) that the driving apparatus and the fixed magnet mechanism are used to create magnetic levitation for precise control of the positioning of the electrode.

Regarding claims 14 and 15, Sakata et al teach (see col. 6, lines 34-59) using a spring and thimble set-up.

Regarding claim ~~18~~ 16, though Aiura et al do not teach the composition of the abrasive, it would have been within the expected skill of a routineer in the art to have chosen a conventional abrasive, such as alumina (Al_2O_3). (For support see paragraph spanning cols. 5 and 6 of Tomari et al.)

Regarding claim 17, Perline teaches (see col. 2, line 52-col. 4, line 9) that the driving apparatus (the electromagnets) is powered by a power device and that the electromagnets are "driven" (i.e.-magnetized). Though 10/076,289 et al is silent about

the rotation of electrode, Perline teaches that the means provide six degrees of freedom (x-y-z Cartesian coordinates and rotation about each of these axes) and it would have been obvious to cause the electrode (with the fixed magnet mechanism) to rotate in order to ensure a more uniform electropolishing (by ensuring that any defects of the electrode are not concentrated in one spot thus forming a groove in the tube surface).

Regarding claim 18, Perline teaches (see col. 2, line 52-col. 4, line 9) that the magnetic levitation means provide six degrees of freedom (x-y-z Cartesian coordinates and rotation about each of these axes) and it would have been obvious to rotate the driving apparatus "by direct mechanical transmission" to cause the electrode (with the fixed magnet mechanism) to rotate in order to ensure a more uniform electropolishing (by ensuring that any defects of the electrode are not concentrated in one spot thus forming a groove in the tube surface).

This is a provisional obviousness-type double patenting rejection.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1-5, 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lorincz et al (US 5,958,195) in view of Pelrine (US 5,099,216).

Lorincz et al (see abstract, Figures 1 and 3 and col. 2, line 38-col. 3, line 20) teach an electroplating means for an inner surface of a long tube, which is applied to

polish the inner surface of the long tube which contains at least one electrode (504) having a cable (80) on one end of the electrode connecting the electrode to a first power source (92), and contains at least two partitions (512) being placed on either side of the electrode. The electrode and partitions are in cooperation with an axial driving mechanism (84) for moving the assembly up and down the tube.

Lorincz et al do not teach a fixed magnet mechanism attached to the electrode and placed between two of the partitions, nor a driving apparatus having plural outer electromagnets nor an axial drive mechanism for moving the driving apparatus.

Perline teaches (see abstract and col. 2, line 52-col. 4, 9) means for controlling the positioning/motion of an object through use of magnetic levitation. The means include a fixed magnet set and a set of adjustable electromagnets. These means allow for reduction of friction and wear and also permits precise control of the positioning of tools. The means provide for motion in any direction and rotation about any axis.

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the magnetic levitation means of Perline into the apparatus of Lorincz et al because the magnetic levitation means reduce friction and wear and allow for precise control of tool positioning, thus providing a more accurate electropolishing method.

It would have been within the expected skill of a routineer in the art to set-up the magnetic levitation means of Perline for the task of moving the electrode of Lorincz et al by including a set of fixed magnets on the electrode and providing a set of electromagnets outside the tube for the purpose of moving the electrode by means of a driving mechanism. There would be an axial driven mechanism for moving the

electromagnets up and down the tube. The electromagnets require a power source of their own, thus necessitating a second power source.

Regarding claim 2, Lorincz et al teach (see col. 6, lines 51-54) that the partitions are made of insulating material (i.e.-not electrically conductive).

Regarding claim 3, Lorincz et al teach (see col. 6, lines 62-64) that the partitions may have grooves (516) cut along the periphery of the insulators for facilitating the flow of electrolyte.

Regarding claim 4, Lorincz et al teach (see Fig. 9 and numeral 920) that the partition may include a plurality of holes for fluently introducing the electrolyte.

Regarding claim 5, Lorincz et al do not teach that the dimensions of the partitions can be enlarged. Perline teaches (see col. 2, line 52- col. 4, line 9) that the driving apparatus and the fixed magnet mechanism are used to create magnetic levitation for precise control of the positioning of the electrode.

Regarding claim 8, Perline teaches (see col. 2, line 52-col. 4, line 9) that the driving apparatus (the electromagnets) is powered by a power device and that the electromagnets are "driven" (i.e.-magnetized). Though Lorincz et al is silent about the rotation of electrode, Perline teaches that the means provide six degrees of freedom (x-y-z Cartesian coordinates and rotation about each of these axes) and it would have been obvious to cause the electrode (with the fixed magnet mechanism) to rotate in order to ensure a more uniform electropolishing (by ensuring that any defects of the electrode are not concentrated in one spot thus forming a groove in the tube surface).

Regarding claim 9, Perline teaches (see col. 2, line 52-col. 4, line 9) that the magnetic levitation means provide six degrees of freedom (x-y-z Cartesian coordinates and rotation about each of these axes) and it would have been obvious to rotate the driving apparatus "by direct mechanical transmission" to cause the electrode (with the fixed magnet mechanism) to rotate in order to ensure a more uniform electropolishing (by ensuring that any defects of the electrode are not concentrated in one spot thus forming a groove in the tube surface).

9. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lorincz et al in view of Pelrine as applied to claims 1-5, 8 and 9 above, and further in view of Lin et al (US 2003/98245).

The teachings of Lorincz et al and Perline are described above in paragraph no. 8. However, Lorincz et al and Perline do not teach that there is a screw mechanism is attached on an end of the electrode assembly for removal of air bubbles.

Lin et al teach (see paragraph no. 20) that a propeller means is added to an electrode for electropolishing the inside surface of a tube for the purpose of exhausting air bubbles generated by the electrolytic reaction.

Therefore, it would have been obvious to one of ordinary skill in the art to have added the propeller of Lin et al to the electrode assembly of Lorincz et al for the purpose of exhausting air bubbles generated by the electrolytic reaction.

[Lin et al is currently commonly owned by the current assignee. Therefore, a statement on the record that the two inventions were subject to common ownership at

the time of the invention is required to remove this reference as eligible prior art under 35 USC 102(e)(1).]

10. Claims 10-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lorincz et al in view of Pelrine as applied to claims 1-5, 8 and 9 above, and further in view of Aiura et al (EP 951960) and Sakata et al (US 4,561,185).

The teachings of Lorincz et al and Perline are discussed above in paragraph no. 8. However, Lorincz et al and Perline do not teach plural closed fillisters being placed on the second partition, wherein the fillister includes a flexible element and a protruding object supporting an abrasive for grinding the inner surface.

Aiura et al teach (see Fig. 3 and paragraph 37) the grinding of the inner surface of a tube by means of abrasives that are pushed against the inner surface.

Sakata et al teach (see col. 6, lines 34-59) using a thimble and spring set-up to apply a constant pressure.

Therefore, it would have been obvious to one of ordinary skill in the art to have added a grinding apparatus, such as that disclosed by Aiura et al to the apparatus of Lorincz et al and Perline because the apparatus of Aiura et al provides for (see abstract) high precision polishing, and it would have been obvious to one of ordinary skill in the art to have used the thimble and spring set-up (fillister) of Sakata et al to apply pressure behind the abrasive elements because the thimble-spring provides a constant pressure thus making the grinding more uniform.

Regarding claim 11, Lorincz et al teach (see col. 6, lines 62-64) that the partitions may have grooves (516) cut along the periphery of the insulators for facilitating the flow of electrolyte.

Regarding claim 12, Lorincz et al teach (see Fig. 9 and numeral 920) that the partition may include a plurality of holes for fluently introducing the electrolyte.

Regarding claim 13, Lorincz et al do not teach that the dimensions of the partitions can be enlarged. Perline teaches (see col. 2, line 52- col. 4, line 9) that the driving apparatus and the fixed magnet mechanism are used to create magnetic levitation for precise control of the positioning of the electrode.

Regarding claims 14 and 15, Sakata et al teach (see col. 6, lines 34-59) using a spring and thimble set-up.

Regarding claim 16, though Aiura et al do not teach the composition of the abrasive, it would have been within the expected skill of a routineer in the art to have chosen a conventional abrasive, such as alumina (Al_2O_3). (For support see paragraph spanning cols. 5 and 6 of Tomari et al.)

Regarding claim 17, Perline teaches (see col. 2, line 52-col. 4, line 9) that the driving apparatus (the electromagnets) is powered by a power device and that the electromagnets are "driven" (i.e.-magnetized). Though Lorincz et al is silent about the rotation of electrode, Perline teaches that the means provide six degrees of freedom (x-y-z Cartesian coordinates and rotation about each of these axes) and it would have been obvious to cause the electrode (with the fixed magnet mechanism) to rotate in

order to ensure a more uniform electropolishing (by ensuring that any defects of the electrode are not concentrated in one spot thus forming a groove in the tube surface).

Regarding claim 18, Perline teaches (see col. 2, line 52-col. 4, line 9) that the magnetic levitation means provide six degrees of freedom (x-y-z Cartesian coordinates and rotation about each of these axes) and it would have been obvious to rotate the driving apparatus "by direct mechanical transmission" to cause the electrode (with the fixed magnet mechanism) to rotate in order to ensure a more uniform electropolishing (by ensuring that any defects of the electrode are not concentrated in one spot thus forming a groove in the tube surface).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D Wilkins, III whose telephone number is 703-305-9927. The examiner can normally be reached on M-Th 10:00am-8:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V King can be reached on 703-308-1146. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Harry D Wilkins, III
Examiner
Art Unit 1742

hdw

ROY KING
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700